Astrophysical Research Consortium
Board of Governors

Minutes of June 10, 2003 Meeting
The Lodge, Cloudcroft New Mexico

(apo35-general summary version of minutes)

TIME AND ATTENDEES

(1-2) The meeting convened at 8:30 am and adjourned at 4:30 pm MDT.

The Governors present and their institutions were: Craig Hogan and Bruce Balick from University of Washington; Allen Sinisgalli and Scott Tremaine from Princeton University; Rene Walterbos from New Mexico State University; Michael Shull from University of Colorado; and Timothy Heckman from Johns Hopkins University.

Angela Olinto from the University of Chicago was an alternate for David Oxtoby and Arieh Konigl and had two proxies enabling her to vote for both Oxtoby and Konigl.

Governors unable to attend the meeting were: Oxtoby and Konigl from the University of Chicago; Daniel Dwyer from New Mexico State University; Anthony Baker from University of Colorado; Allen Rowe and John Bahcall from Institute for Advanced Study; and Theodore Poehler from Johns Hopkins University.

Walterbos had a proxy enabling him to vote for Dwyer; Shull had a proxy enabling him to vote for Baker. Heckman had a proxy enabling him to vote for Poehler.

At the Board's request, a few guests were present for all or part of the meeting conducted in open session. These included: Edwin Turner, 3.5-m Telescope Director; Rich Kron, 2.5-m Telescope Director; Kenneth Paap and Kurt Anderson, New Mexico State University; Bruce Gillespie, APO Site Operations Manager; Alan Uomoto, Johns Hopkins University; John Bally, University of Colorado; Ed Kibblewhite and Don York, University of Chicago; Chris Stubbs, University of Washington; Michael Strauss, Princeton University; Michael Evans, ARC Business Manager, was present during the entire meeting during open and executive sessions

OPEN SESSION

WELCOME

In his role as Chair of the Board of Governors, Walterbos chaired the meeting. He began by welcoming Board members and guests. He outlined the overall plan for the meeting noting that, following the welcome, there would be a brief executive session that the guests would welcome to stay and attend if they wished.

EXECUTIVE SESSION

The Executive Session section of these minutes has been removed from the apo35-general version of these minutes)

Walterbos reported that Ron Irving and Carol Zuiches, both from the University of Washington, had agreed to serve as ARC Secretary and Treasurer respectively, if elected by the Board. Zuiches was elected as ARC Treasurer for a term one and one half year term beginning July 1, 2003. Irving was elected as ARC Secretary for a term one and one half year term beginning July 1, 2003.

OPEN SESSION

(5) Ed Turner, the 3.5m Director, gave the Board some things to think about for later meeting discussion. The future of APO. ARC needs to consider where the 3.5m telescope fits into the decade of 6 to 10 meter telescopes. It is becoming increasingly difficult to raise federal funds for maintaining smaller telescopes. What are the impacts on APO after the 2.5m is shut-down, post-SDSS operations? As the APO and the 3.5m telescope become middle–aged what are the repercussions for maintenance, science goals, etc.? What direction should APO take for the next five years.

SDSS REPORT

Kron gave a summary of the SDSS Director, Project Manager and Spokesperson reports that were presented the prior day to the SDSS Advisory Council. Kron's presentation is shown in Appendix 1 of these minutes.

Baseline and accomplishments through 06/02/2003

Imaging Survey (sq. degrees)	Baseline	Actual
Northern Survey (Unique)	6134	5575
Southern Survey (Unique)	745	738
S. Equatorial Stripe (Good Unique)	2053	1908
Imaging Subtotal	8187	7483

Spectroscopic Surveys	Baseline	Actual
Northern Survey-Plates	807	651
Southern Survey-Plates	148	153
Southern Equatorial- Special Plates	165	139
Spectroscopy Subtotal	972	790

Cost to Complete the five-year survey cost comparison:

November 20, 2001	$28,178K
November 24, 2002	$28,008K
June 6, 2003	$27,837K

Data Release Schedule (Tentative)

DR#	Data Through	Release to Collaboration	Tentative Public Relaease
DR1	July 2001	Sep 2003	Jan 2004
DR2	July 2002	Nov 2003	Jan 2004
DR3	July 2003	Dec 2003	Jul 2004
DR4	July 2004	Aug 2004	Jul 2005
Final	July 2005	Aug 2005	Sep 2005

Slides were presented which show the diversity of SDSS science currently being accomplished. To summarize the some the discussion from the AC meeting the day before Kron presented the following points:

The AC had decided not to pursue the Near-Earth Asteroid topic any further and set the following as priorities:

1. whenever conditions permit, fill the gap.
2. when unobserved regions of the NGC are not accessible, or when the gap has been filled, undertake the SEGUE program.
3. explore whether ther N search program can be accommodated if the extension is for 3 years as opposed to 2 years.

Action item from the Ac meeting: To devise model observing plans such that we can evaluate what could be accomplished in two years, and separately in three years, with a program that melds these surveys together. To enable the discussions prior to the next Advisory Council meeting (the next AC meeting subsequently set for October 1 at the O'Hare Hilton). The plans (science, operations, cost) should be presented by September 1 to the Advisory Council.

Since Kron will become the Director July 1st, the CoCo has started the search for SDSS Spokesperson candidates. The Spokesperson election will take place later this year. Until a new Spokesperson is elected Kron will continue to fulfill the Spokesperson's responsibilities.

Summary of discussion following Kron's report:

None of the "Futures" proposals require extensive amounts of 3.5m time. Maybe this should be rethought. The Super Novae proposal would require 3.5m spectroscopy follow-up, possibly 300 over 3 years. Use of the 3.5m as an in-kind contribution would strengthen funding proposals.

ARC needs to think longer term, 5 to 10 years not just the 2 to 3 years the SDSS Futures Committee was asked to review. Will SDSS simply end or will it continue to change? ARC needs to consider the following when thinking about future surveys: near-IR survey, deeper survey, more sky coverage, spectroscopy.

The funding probabilities maybe the reverse of the Futures Committee priorities. Some thought the Near Earth Asteroid (NEA) proposal might not be easy to finance and that it would take too much telescope time.

The possibility was raised adding new members who were interested in NEA? There is not much interest in NEA by current members. Should ARC consider changing its composition post 2005 or post SDSS?

What will be the operating costs of SDSS post-2005? Is there a lower SDSS operating cost mode? The current-on-the-mountain SDSS operations cost (NMSU staff, material & supplies) is approximately $1.4M per year excluding Fermilab's in-kind contributions. There needs to be more thought given to 2005 staffing and streamlining operations post-2005. Data processing should be kept as is through the end of the survey. When considering the post-2005 site operating cost one must consider that when the 2.5m is closed the annual 3.5m operations budget may need to be increased by as much as $300K per year due to the loss of current infrastructure and staff cost sharing.

The SDSS has been very productive for research and has led to many 3.5m papers including follow-up science.

ACTION: Olinto made a motion, seconded by Shull, that a committee be formed to prepare a report for the Board's review by next Summer regarding the future utilization of the ARC 2.5m and 3.5m assets on a 5 to 10 year horizon. The report should include options if the 2 to 3 year SDSS extension funding requirements fail and pay close attention to SDSS equipment utilization. The committee should have one member from each institution. The motion passed by unanimous vote with nobody abstaining. The committee is to be established in the next month or so and a preliminary report of possible topics should be made available for the Nov-03 annual meeting.

(7) INSTITUTIONAL POSITIONS ON APO - 3.5-m

Prior to the meeting each institution was asked to consider the following items and report to the Board at the meeting:

1. What are your institutions major goals for involvement with the ARC 3.5m?
2. Would your institution consider changing it share of telescope time?
3. Should ARC consider adding new members?
4. Should ARC consider constructing new facilities?

The following is a summary of each the institutions report.

(7a) University of Washington, Balick

The UW considers APO to be a very well run observatory. Ed and Bruce have good people skills. There is nothing that needs urgent fixing, working well as is. No need for change in governance. UW is pleased with operations, improvements and the decision process.

Financial support for APO should stay as it is or go up. The Capital Improvement Funding (CIF) and the Maintenance and Repair (Sinking) funding could be separated as the facility ages and funding for the latter guaranteed. The UW appreciates the comraderie and intellectual/technical investments of partners. The UW will remain a fully supportive active partner.

The UW's strategic plan includes two pillars: time domain and theory, neither of which are built upon access to 3.5m; however, both will be enhanced by such access. Access to the 3.5m will support a diverse set of science programs by existing and new faculty and students. The UW's need for a general purpose telescope over the next ten years remains but it will need access to other spectroscopic facilities. The existing general purpose, easy, safe remote access, new operational modes such as "hands-off" monitoring programs or short (1-hour) programs, adaptive facility with diverse instruments and access for special experiments suits the UW well. The 3.5m will increase its educational role with graduate and undergraduate students, especially as "experimental learning" is imbedded more deeply in the UW curriculum

The average age of the faculty is dropping fifteen years over the next five years so its difficult to predict what the department will want ten years from now. Buying into a larger telescope has pros and cons but isn't a strategic opportunity. A buy into a larger telescope would require a stronger strategic case, more faculty interest and a more benign funding climate. For $0.5M per year the UW receives twelve nights per faculty member per year. To buy only 5% of a 10m telescope it would cost $5M capital plus the same $0.5M per year. 5% of a larger telescope is too expensive for a department the size of the UW's.

The UW is generally satisfied but has a need for wide-field imaging, prime focus facility. Partnering with WIYN may satisfy that need. The UW is pleased with the push to the near-IR. A permanent high-radial resolution velocity instrument would be worthwhile. The LSST is the centerpiece of time domain and the UW will position itself to exploit the data quickly. Time domain studies are enhanced if we can dynamically control our allocation of time within large contiguous blocks (~4 blocks of 3 weeks) which may be an easier system for the director to schedule. New scheduling paradigms should be investigated.

Site weather is a serious issue. We anticipated 30% photometric but it's been about 15%. A "deal" to move the telescope to a significantly better site might be interesting to discuss. Modifying the telescope top-end would give the 3.5m some unique capabilities.

Funding is very tight at the UW. The UW is not able to donate more funds, but would consider smaller shares of time if other partners reciprocate. The unpaid SDSS invoices are impacting the UW's administrations confidence in ARC. The UW like the current ARC partners and the small number of member institutions. Regardin a question if ARC had met the goal of a lean operation for the 3.5m, Balick's answer was affirmative.

(7b) University of Chicago, Olinto, Kron, York

UC will soon have a new A&S Dean and Astronomy Department Chair. The ARC 3.5m is a unique facility. The 3.5m is good for UC's diverse faculty and students. A large range of science is being

accomplished with the 3.5m. UC is committed to continue it's involvement with ARC. No comment on the direction of the department for 5 to 10 years from now. Kent, Frieman and Kron all have joint appointments at Fermilab. The UC share is currently large enough for the Fermilab involvement. Lots of grad students are using the telescope. Student access to and training on the 3.5m is very important to UC. Students have access to other small telescopes but the focus is on the 3.5m. UC supports the JHU spectrograph effort.

In regards to size of the collaboration and costs, UC has no strong recommendation to change anything from the current status. A general purpose telescope with flexible scheduling is good for UC. Kent does the scheduling of telescope time for UC. The current scheduling system works well for both short-term and long-term and time-domain projects.

The 3.5m will be considered small in five to ten years. In the future we may need to specialize in niche projects suitable for its size.

When asked if there had been formal discussion in the past of having Fermilab join ARC, Kron responded, that this had been discussed but it is not currently a priority at Fermilab.

(7c) Princeton University, Tremaine, Strauss

The department is primarily focused on theoretical astronomy. PU has a small user base for the telescope, primarily Strauss and Turner. The 3.5m has been wonderful for training PU graduate and some undergraduate students. PU is not actively looking to change it share percentage. Follow-up on SDSS data will keep the 3.5m busy for three to five years post SDSS. The use of the 3.5m is uncertain in the post SDSS five to ten year timeframe. Collaboration with other member institutions works well with the current scheduling system. PU believes APO is a lean operation.

PU is not in favor of adding new partners. The consortium has found it difficult to fund new instruments like the NIC-FPS or a GRIM replacement. PU has no clever ideas to improve instrument funding. The SDSS loans and unpaid invoices are a problem at PU.

(7d) Johns Hopkins University, Uomoto

JHU Time:
JHU has 8% of the telescope time%.
Two long-term (1-year) programs use half the time.
Remainder scheduled quarterly.
3.5m telescope not a primary data source for JHU.

Goals:
Primary science
Auxiliary observations
But little success, probably because of our time assignment strategy.

Value:

Student training
SDSS follow-up
Potential for quick-turnaround observing
Other supporting observations

Complaints:
Low time fraction for JHU
Limited instrument suite
Weather
Local and global productivity (e.g., publications)

Would JHU Change Share Amount:
No. Keep 8% share(but with wide range of options)
Would want >20% with different instrument suite
Telescope ownership is important for JHU
CTIO, VLT, Gemini, UKIRT, Magellan and others have been more productive for them.
IR spectroscopy and deep, wide-field imaging are important capabilities.

Would JHU Pay More?:
Probably. Difficult but not impossible
Money should go to instrument development
About $300K/year needed for instruments only ($1M instrument every 3 years)
Clear plan, support by science goals required

Large Projects?:
JHU would support large projects
Projects must be compelling and significant
But not as big as SDSS
2dF model? Would be fine.

New Partners?:
No strong opinion here
Same as paying more for small share owners
How would shares redistribute if charges increased?

SDSS:
JHU would support and encourage SDSS spin-off programs, including instrument decisions
The SDSS connection is unique for the 3.5-m telescope and should be exploited
SDSS payoff for JHU was high

General Issues (ARC Structure, etc)
No strong opinion at JHU on structure
New members?
Other facilities caution: An ill-conceived or failed project would reflect badly on ARC and APO.

End Notes:
The ARC 3.5-m telescope should be the best at something, for example:
  * Mid- or high-resolution IR spectroscopy?
  * R=1M uv/optical spectroscopy?
  * IR F-P imaging?

Cost would be modest with high scientific payoff.

Additional Comments:
* Operating cost per square meter comparable with other telescopes of similar size but much better than Gemini.
* There are 63 people at JHU with PhDs (not all are observers). SDSS is good for that; the 3.5m is spread out a bit thin.
* Perception that science output of the telescope is somewhat lower than it "should be". Due to instrumentation.
* Productivity varies somewhat with institution, which may be a “threshold” effect.

(7e) University of Colorado, Shull

CU has a 1/16th share and would like to double it. There are seven faculty members actively using the 3.5m.

Goals include:
* Education and training
* Develop instrumentation such as: focal plane reducer for SPICAM, Multi-object capability for DIS, Upgrade NIC-FPS for larger chip, Long-slit on Echelle.

CU is grateful for CIF support. Internal fund plus NSF funds as a way to finance new instruments. At this time, there is nothing to report on the status of instrument proposal submitted to NSF.

CU has no interest in using the 3.5m for large projects that would use up its small share of time. CU would prefer to not to add new members, it’s happy with the current finance and organizational structure. Wide field imaging is of particular interest to CU.

A unique 3.5m observing niche may yield an opportunity to trade time on other telescopes. In this era of 10m telescopes ARC should now be thinking about where it wants to be five to ten years from now.

(7f) New Mexico State University, Walterbos

1. INSTITUTIONS MAJOR GOALS FOR INVOLVEMENT WITH ARC 3.5-m?

- Not yet pursued large targeted projects.

- Students’ PhD thesis research has been important and will likely remain important.

- Telescope has been used more as a broad-based facility, where having different instruments is valuable (even if current instrument suite is not all that broad).

The student training aspect of the 3.5-m is certainly a big plus to the department. Also, having guaranteed access to the telescope likely translates in more and better graduate student applications, and in success with faculty/postdoc recruiting, although these benefits are somewhat hard to quantify.

We have several students working on SDSS PhD thesis topics. So far, these have not demanded a large amount of 3.5-m follow-up, but this could change. Part of the reason for this is the flood of data that SDSS provides, and we may not want to encourage students to get further buried in data by taking lots of 3.5-m data as well.

Instrumentation

a. With new improved DIS, demand for 3.5-m will likely go up in our department.

b. Largest stated demand from department members is for IR spectrograph. We would really like to see the JHU spectrograph built. One faculty member is interested in high-speed photometry.

c. Availability for guest instrumentation has been pursued mostly by one member of the department, to whom this continuing opportunity is important.

2. WOULD YOU LIKE TO SEE YOUR INSTITUTIONAL SHARE OF THE 3.5-M TELESCOPE INCREASE, DECREASE, OR MAINTAIN AT THE CURRENT LEVEL?
and
3. WHAT WOULD DRIVE THIS CHOICE?

- We seem to be reasonably well met by our current share.

- Concerned about giving up on telescope time for “one-time deals” of attracting a new instrument, since less telescope time may reduce effectiveness faster than linear.

- Guaranteed access to the 3.5-m is a major strength.

- Funding realities seem to make increasing (or even maintaining) our share a concern, however.

4. SIGNIFICANT BLOCKS OF TIME TO SDSS FOLLOW-UP?

Not necessarily unacceptable, but should be funded, not be “unfunded mandates”.

For example, there was not much enthusiasm to be the n-th author on a paper as compensation for losing one-third of the time. Rather, true scientific participation would be required, not just co-authorship. Also, the research should be funded.

5. GENERAL ISSUES REGARDING ARC AND APO

a. Does ARC remain viable?

APO and ARC have been very important to us. We realize the challenge of finding continuing funding and note the general problem that universities are becoming partners in telescope projects with a 5-yr funding window, while the facilities they build have a 30-yr life time. This seems an unsolved, but increasing problem for all astronomy departments.

b. Should ARC recruit new members? Only for new projects? Or also to offset costs of current projects?

This may be driven by finances and others' future plans. Can we remain in 'status quo' for long? If not, new partners may be required.

c. Should we pursue location of other facilities on the mountain, and what would be the motivation for doing this? (New projects, financial resources, etc?)

There has to be scientific interest. Projects have to be viable. We should not be tempted to add projects just for the sake of running more things. The staff, however, may feel different about this.

6. OTHER ISSUES

Several members expressed concern about the perceived lack of capabilities of the 3.5-m in the community, including in some referee reports on NSF proposals. ARC needs to do a better job at observatory level planning and assessing of science outcome from the telescope, in various scientific areas. The reputation of the observatory needs to be improved.

ARC institutions communicate poorly with each other and resources, e.g. in the form of telescope time, have not been combined very well. A new meeting on science collaboration and science with the 3.5-m may be useful.

We note that basically all major astronomy PhD granting program in the USA have joined or are in the process of joining major telescope initiatives, which suggests to us that it is important that NMSU remain part of ARC and obtain maximum benefit from our involvement with APO facilities, in order to remain competitive in attracting graduate students, faculty, and funding.

(8) Apache Point Observatory, Gillespie

Observatories either grow or decline, steady state is not typical. The observatory is working well and the staff is "in the zone". We need new projects and challenges in-order-to retain the experienced staff we currently have. Adding new instruments every couple of years is probably not enough to keep the staff excited. We should spend more on the 3.5m to make it the best telescope for its size or start a new telescope project. The SDSS observers will soon start looking for new challenges elsewhere if they don't see something new and interesting coming soon. Loosing as many as three observers near the end of the

SDSS survey is a possibly; we could get by but with some difficulty.

Lunch Break 12:00 – 12:45

(9) THE 3.5m TELESCOPE DIRECTOR'S REPORT

Turner presented the following series of slides which focused the discussion of various 3.5m issues. The presentation slides are shown in Appendix 2 of these minutes.

APO 3.5m Strengths and Weaknesses Table

Strenghts:	Weaknesses:
Exc & able staff	Projects funding level (CIF)
Remote & Flexible observing	NIR/AO instrumentation
Exc SDSS & other science	Baffling, small FoV (f/10)
Exc optics/tracking/pointing	Mirror motion & safety
High reliability	Consortium diversity issues
Good optical spectrographs	Management on part-time basis by faculty
Good site	2^{ndy} priority for much of ARC
Good on-site facilities	Mirror coating arrangements
Good testbed for instruments	Facility "middle-aged and somewhat fragile
Functional opt/IR imagers	Competition from 6-10m telescopes

Additional comments: Doubling the CIF to $600K would solve a lot of problems. The IR spectrograph could be purchased with internal funds. An increase in the overall budget by 25% would also help. Teaching buy-out would help make the part-time faculty support more attractive to the Deans. Getting donor funding for capital/construction expenses is much easier than getting donor funding for operations expenses. We should try to get our institutions to match donor funding. An increase in the CIF maybe more palatable to the universities because most of the funds are spent at the institutions. The university development Offices could be of great assistance in fundraising efforts. The 3.5m may be a bit too small to be a high-profile attractor of private funds.

Pros and Cons of major 3.5m Long Term Strategies

Telescope	Scientific	Financial	Organizational	Operational
General Purpose Telescope	Max # of users/institu. Flexible. Competition.	Slow budget increases. Difficult fund raising.	Status quo is working. Easier to sell shares.	Solved problem, but can innovate if needed.
Special Purpose(s) Telescope	Max. science impact and visibility. What? Who?	Perhaps cheapest? Easiest fund raising.	Major and complex reorg required.	Innovative and perhaps cheaper modes.
"Real" Hybrid Telescope	Best of both worlds? Not enough time for both	Most expensive? Easier fund raising.	Worst of Both worlds? Gradual evolution?	Complex, perhaps very complex. Unsolved.

The above matrix compares the pros and cons of the scientific, financial, organizational and operational issues of general purpose telescopes, special purpose telescopes and hybrid telescopes. The hybrid telescope is considered 50% general purpose and 50% specific (which may not be practical or feasible).

Discussion of Telescope System Instrumentation Program (TSIP) funding program: Originally the TSIP was just for 8- to 10-meter class telescopes. If you build a new instrument: for each TSIP dollar for the new instrument, the astronomical community gets fifty cents worth of telescope time. For improvements each dollar received means one dollars worth of telescope time to the astronomical community. The conversion of dollars to hours of ARC 3.5m telescope time needs to be reviewed and evaluated. The program doesn't seem to be oversubscribed.

There is little cross-institutional collaboration. The communications between institutions who have similar projects needs to be improved. Selected objects would likely make good collaboration projects.

There is the sense that the 3.5m has filled the role is was designed to fill ten years ago, but we have not been as successful in getting NSF funds for instrument development as anticipated. The 3.5m has been a strong general-purpose telescope. Note the 2.5m is a special purpose telescope so overall ARC is in the hybrid situation. Ten years ago the bar was at the 4m class now its at the 8m level.

Swapping time with WIYN, a more special-purpose telescope, was discussed last year but there was little interest and no takers on this option.

There was a consensus that a near-IR spectrograph was the instrument of choice for our general-purpose telescope. ARC should develop a plan soon to fund a near-IR spectrograph, waiting for outside funds does not make sense. Questions that need to be answered: Shall we share the work of building the IR spectrograph between institutions? Can we distribute cost over several institutions using in-kind contributions to partially fund the design and fabrication. Turner will develop a budget model/plan for building the near-IR spectrograph.

Break 3:25 – 3:45

Kibblewhite suggested that the consortium should study adaptive optics especially if building an IR spectrograph. If we don't have adaptive optics in five years we will be falling behind in the technology. Stubbs added, we have laid the ground work for tip-tilt. Instabilities in the secondary/tertiary support are limiting us from getting tip-tilt working. The Futures Committee needs to consider the IR spectrograph, Adaptive Optics, tip-tilt in their study. The skills of several institutions will be needed in this review, especially if we want to make IR spectroscopy our niche

Scheduling: Turner was basically happy with the current system, less stress and strain than before. The quality of the programs are effected by the scheduling. About 1/3rd get what they request, about 1/3rd get acceptable time slots and about 1/3rd get poor time slots. CU has a web entry telescope time request system available that it would make available to anyone interested.

Gillespie commented on APO's dark sky: Good news, based on satellite images from ten years ago and now the dark sky in the APO area has improved. This is due to recent lighting ordinances in Alamogordo and Cloudcroft. El Paso is about to pass its first version of a modern out door lighting code. Holloman AFB lighting has also improved. Something to worry about, Lowes and Home Depot are both opening stores in Alamogordo which means more growth resulting in more dust causing more scattered light. In the continental US, McDonald Observatory has the darkest skies, APO is second.

ARC Futures Committee: Walterbos will form an ARC Futures Committee, to develop a five to ten year vision for use of the 3.5m and SDSS 2.5m facilities at APO, write their charge and select a Chair person. Ed Turner and Rich Kron will be ex-officio members. The committee is to present an update at the November meeting. The charge may need to be revised in November after some preliminary work has been completed.

(10) LAMA discussion: A committee of Anderson, Gilespie, Turner and Kron will discuss this issue further. The current sense of the Board was that ARC is not interested in a tenant only arrangement. The LAMA proposal has grown from one 12m to one 6m to currently an array of six 6m liquid mirror telescopes being located at APO. A tenant arrangement would need to be worked out. There was little interest by ARC members in the project. The two major concerns were the mercury hazard potential (factual and public perception) and the fact these telescopes will be only prototypes, the final array, to be located elsewhere, may never be built.

10^{th} Anniversary: May 2004 will be the 10^{th} anniversary of the 3.5m. having some sort of celebration next year (e.g. a science symposium) will be discussed further at the November meeting.

EXECUTIVE SESSION

The Executive Session section of these minutes has been removed from the apo35-general version of these minutes)

Turners term as 3.5m Director ends December 31, 2004. A 3.5m Director Search committee was established. Pier's term as the SDSS Advisory Council Chair term expires December 31, 2003. Pier will establish a SDSS AC Chair search committee. Walterbos's term as the ARC Board of Governors Chair also expires December 31, 2003. Walterbos stated that because of the recent and pending changing in Secretary/Treasuer, SDSS Director and SDSS AC Chair he would serve one additional year as BoG Chair if the Board would like him to. The BoG's voted accept Walterbos's offer to serve as BoG Chair for an additional term ending December 31, 2004

OPEN SESSION

NEXT MEETING

Since the next Advisory Council meeting will be in conjunction with the collaboration meeting at Fermilab in late September or early October and because travel during Thanksgiving week is getting more difficult than in past years, the next annual meeting of the Board of Governors

will be on Monday November 24, 2003. The Monday of Thanksgiving week has been in past years the day of the Advisory Council meeting. In 2004, the annual Advisory Council and Board of Governors meetings may both be held the week prior to Thanksgiving, this will be determined at a later date.

ACTION: Shull made a motion, seconded by Olinto, that the meeting be adjourned. The motion passed by unanimous vote with nobody abstaining.

Respectfully submitted,
Michael L. Evans
ARC Business Manager

APPENDIX 1
Rich Kron presentation slides

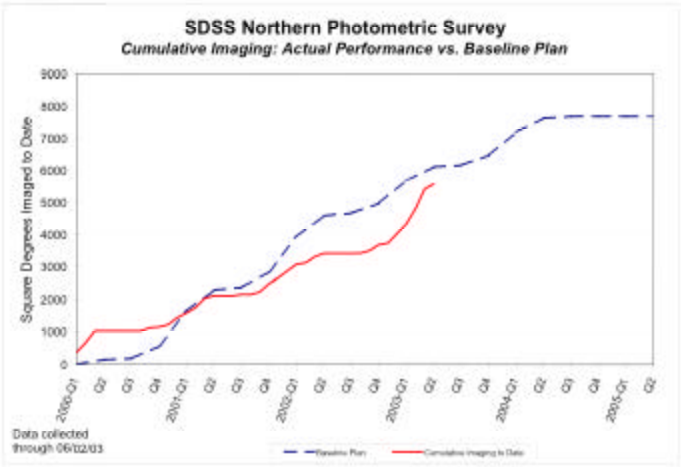
RK Slide 1

SDSS Advisory Council meeting

report of Director (Peoples)
report of Project Manager (Boroski)
report of Spokesperson (Kron)

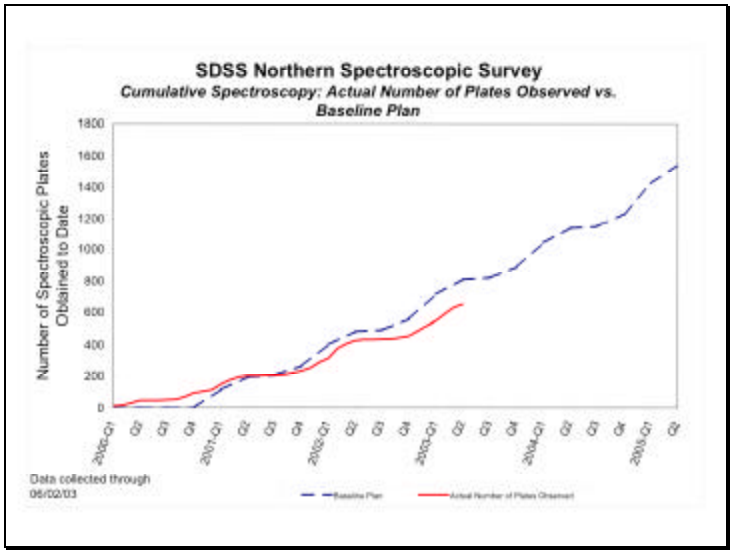
discussion of survey extension

RK Slide 2



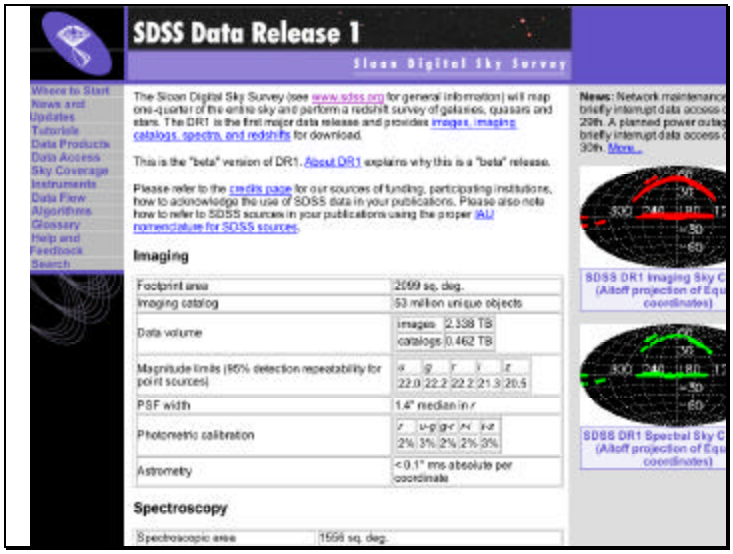
Note: There was better imaging last year due to weather. It's hard to predict how much imaging will get accomplished in a year because it is so weather-dependent.

RK Slide 3



Note: spectroscopy has not been limited by imaging yet.

RK Slide 4



Note: from SDSS web page.

RK Slide 5

Data Release 2

- Efforts are now focused on getting photo 5_4 reductions into the hands of the collaboration and preparing for the public DR2 release.
- Involves:
  - Reprocessing all data collected through June 2002 with photo 5_4 and rerun 23.
  - Loading outputs into the DAS, updating documentation, extensive testing and evaluation.
  - Implementing the CAS loading process into the Fermilab production operation, loading outputs into the CAS, updating documentation, and extensive testing and evaluation.

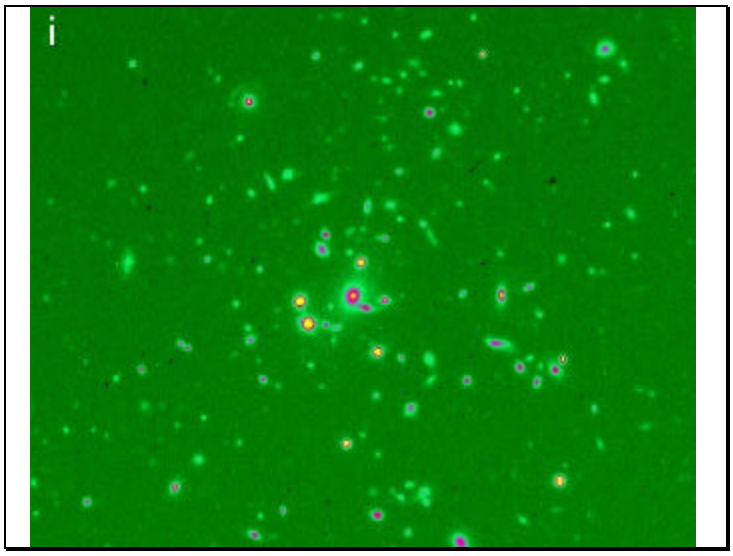
RK Slide 6

Revised Release Schedule (*Tentative*)

	Contains imaging data collected through	Data available to the collaboration in the form of flat files through the DAS	Tentative public release date
DR1 *(5_4 reductions)*	July 2001	Sep 2003	Jan 2004
DR2	July 2002	Nov 2003	Jan 2004
DR3	July 2003	Dec 2003*	July 2004
DR4	July 2004	Aug 2004*	July 2005
Final Release	July 2005	Aug 2005*	Sep 2005

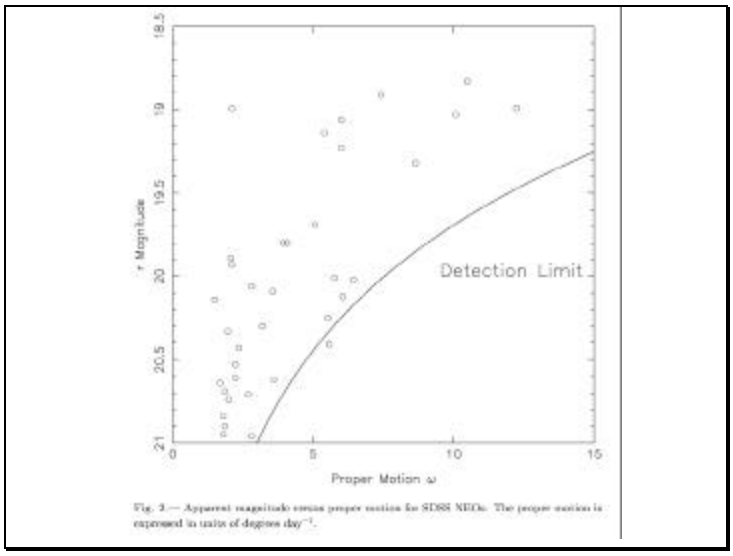
**Dates for DR3 and beyond are very preliminary estimates.*

RK Slide 7

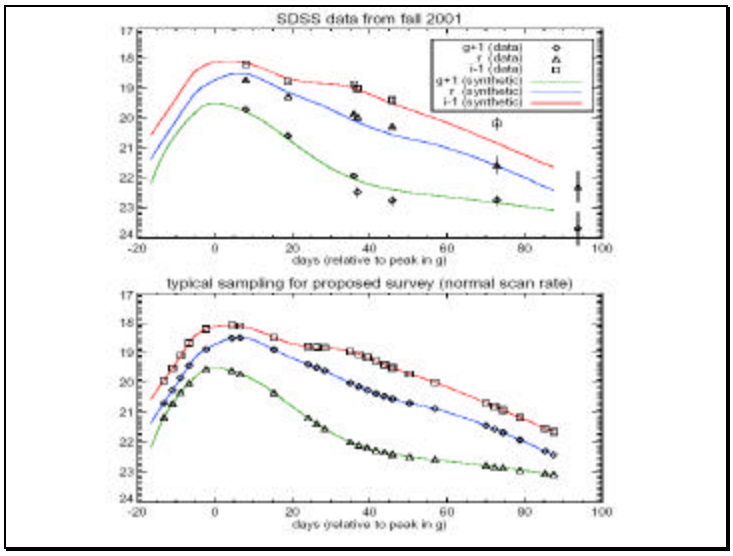


Note: The image above was taken with the Subaru telescope. The object was initially detected with the SDSS telescope. The same object has also been followed up on the ARC 3.5m and the Keck telescopes.

RK Slide 8



RK Slide 9



RK Slide 10

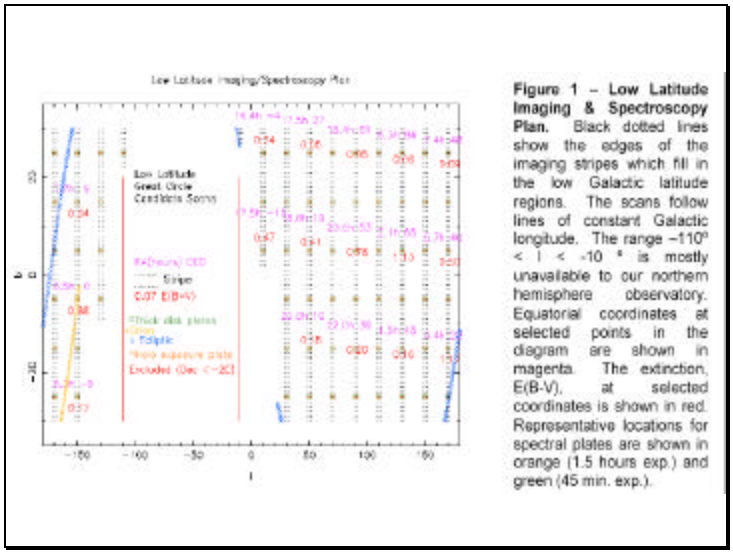


Figure 1 – Low Latitude Imaging & Spectroscopy Plan. Black dotted lines show the edges of the imaging stripes which fill in the low Galactic latitude regions. The scans follow lines of constant Galactic longitude. The range $-110^{\circ} < l < -10^{\circ}$ is mostly unavailable to our northern hemisphere observatory. Equatorial coordinates at selected points in the diagram are shown in magenta. The extinction, E(B-V), at selected coordinates is shown in red. Representative locations for spectral plates are shown in orange (1.5 hours exp.) and green (45 min. exp.).

RK Slide 11

June 9 discussion

-- do not pursue the near-Earth asteroid topic further

-- prioritize the remaining programs as follows:

1) whenever conditions permit, fill the gap

2) when unobserved regions of the NGC are not accessible, or when the gap has been filled, undertake the SEGUE program.

3) explore whether the SN search program can be accommodated if the extension is for 3 years as opposed to two years.

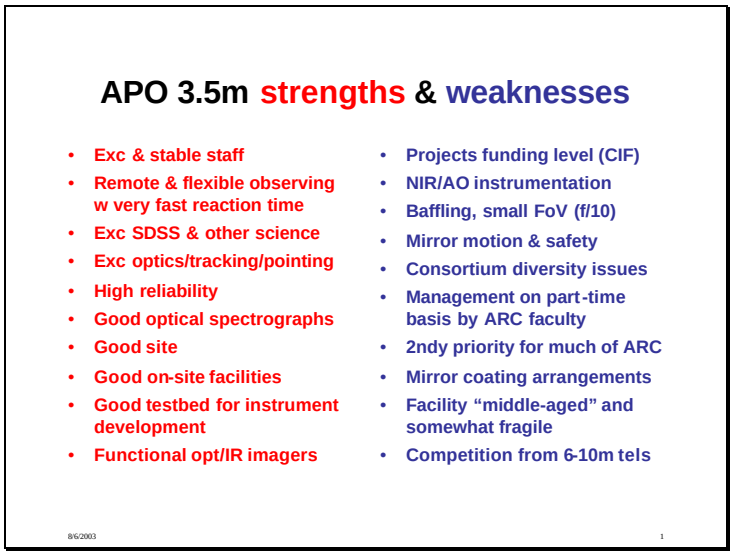
RK Slide 12

The task is to devise model observing plans such that we can evaluate what could be accomplished in two years, and separately in three years, with a program that melds these surveys together.

To enable these discussions prior to the November 24 AC meeting, the plans (science, operations, cost) should be presented by 1 September to the Advisory Council.

APPENDIX 2
Ed Turner presentation slides

ET Slide 1



ET Slide 2

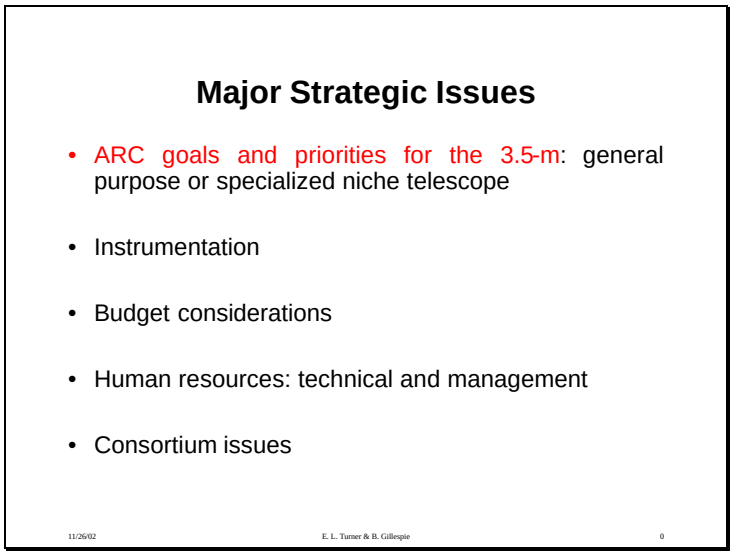
Pros & Cons of Major APO 3.5m Long Term Strategies

	Scientific	Financial	Organizational	Operational
General Purpose Telescope	Max # of users/institu. Flexible. Competition.	Slow budget increases. Difficult fund raising.	Status quo is working. Easier to sell shares.	Solved problem, but can innovate if needed.
Special Purpose(s) Telescope	Max science impact and visibility. What? Who?	Perhaps cheapest? Easiest fund raising.	Major and complex reorg required.	Innovative and perhaps cheaper modes.
"Real" Hybrid Telescope	Best of both worlds? Not enough time for both	Most expensive? Easier fund raising.	Worst of both worlds? Gradual evolution?	Complex, perhaps very complex. Unsolved.

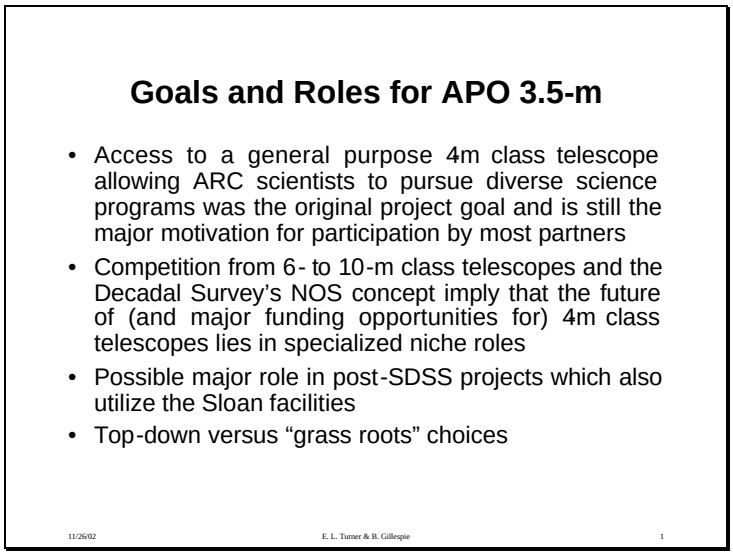
8/6/2003 2

Appendix 3
Ed Turner & Bruce Gillespie presentation slides

ET/BG Slide 1



ET/BG Slide 2



ET/BG Slide 3

Instrumentation

- Current 3.5-m instrumentation paradigm appears to be inadequate (but 2 submitted NSF proposals)
- Only the DIS upgrade has successfully (but weakly) leveraged outside funding
- Visitor instrument program has one success, GFP, but it is relatively specialized and low demand
- Two major new instrument projects associated with sale of telescope shares, but still may require NSF support to be completed
- Instrumentation projects of essentially all other observatories also in crisis (?50% overruns the norm)

ET/BG Slide 4

Future Budget Considerations

- Current Ops budget is satisfactory and stable but would become inadequate if no other major projects share the site infrastructure and staff costs (e.g., post-SDSS) and/or if SPO closes or greatly contracts
- Current CIF budget is inadequate to provide state-of-the-art general purpose instrument suite unless heavily leveraged
- Sinking fund demands will gradually escalate as the telescope and other facilities age
- Sale of telescope time via TSIP or to new/existing 3.5-m partners is the only obvious possible source of major income increases

ET/BG Slide 5

Human Resources

- Need to maintain engineering and other project capabilities at the ARC institutions for both current and future undertakings
- Management as an "add-on" task for busy university faculty members is often fragmented, chaotic, inefficient and ultimately costly
  - Director
  - Telescope Scientist
  - Instrumentation Scientist
  - Individual Instrument Scientists
  - Institutional Schedulers and User Cmte members

ET/BG Slide 6

ARC Consortium Issues

- Re-examine goals and purposes
- Possible ARC actions
  - Major new projects
  - Seek additional resources
  - New member institutions
  - Adjustment of 3.5-m shares
  - Structural re-organization